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09/874,091	06/04/2001	Deborah Charych	1680.002	6042

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EXAMINER

TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
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1639

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

MY-CHAU T TRAN

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,60-73 and 79-91 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,60-73 and 79-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

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DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Status of Claims

1. Applicant's amendment filed 3/18/04 is acknowledged and entered. Claims 55-59, and 74-78 have been canceled. Claims 1, 60-61, 72-73, and 79-80 have been amended.
2. Claims 2-20, and 53 are canceled by the amendment filed on 6/30/03.
3. Claims 21-52, and 54 are canceled by the amendment filed on 12/9/02.
4. Claims 1, 60-73, and 79-91 are pending.
5. This application claims priority to a provisional application 60/209,711 filed 6/05/2000.
6. Claims 1, 60-73, and 79-91 are treated on the merit in this Office Action.

Withdrawn Objections and /or Rejections

7. In view of applicant's amendments of claim 72, the previous objection has been withdrawn.

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8. In view of applicant's amendments of claims 60-61, 72-73, and 79-80, the previous rejections under 35 USC 112, first paragraph (new matter) have been withdrawn.

9. In view of applicant's amendment of claim 1, the rejection of claim 1 under 35 USC 102(b) as anticipated by Pease et al. (US Patent 5,831,070) has been withdrawn.

10. In view of applicant's amendments of claims 1, 60-61, 72-73, and 79-80, and cancellation of claims 55-59, and 74-78, the rejection of claims 1, 55-64, and 66 under 35 USC 103(a) as being unpatentable over Wagner et al. (US Patent 6,406,921 B1) and Pease et al. (US Patent 5,831,070) has been withdrawn.

11. In view of applicant's amendments of claims 1, 60-61, 72-73, and 79-80, and cancellation of claims 55-59, and 74-78, the rejection of claims 65, and 67-72 under 35 USC 103(a) as being unpatentable over Wagner et al. (US Patent 6,406,921 B1) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 55-64, and 66 above, and Barrett et al (US Patent 5,482,867) has been withdrawn.

12. In view of applicant's amendments of claims 1, 60-61, 72-73, and 79-80, and cancellation of claims 55-59, and 74-78, the rejection of claims 73-83, and 85 under 35 USC 103(a) as being unpatentable over Wagner et al. (US Patent 6,406,921 B1) and Pease et al. (US Patent 5,831,070) has been withdrawn.

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13. In view of applicant's amendments of claims 1, 60-61, 72-73, and 79-80, and cancellation of claims 55-59, and 74-78, the rejection of claims 84, and 86-90 under 35 USC 103(a) as being unpatentable over Wagner et al. (US Patent 6,406,921 B1) in view of Pease et al. (US Patent 5,831,070) as applied to claims 73-83, and 85 above, and further in view of Barrett et al (US Patent 5,482,867) has been withdrawn.

Response to Arguments

14. Applicant's arguments with respect to the withdrawn rejections above have been considered but are moot in view of the new grounds of rejections.

Claim Rejections - 35 USC § 112

15. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 1, 60-73, and 79-91 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 73 recite that the thickness of the silicon oxide layer is about 200 to 900 Å

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the silicon oxide layer thickness is 600 to 1000 Å or 800 to 1400 Å on an aluminum metal layer. Therefore, the scope of the invention as originally disclosed in the specification would not encompass the scope of the limitation wherein the silicon oxide layer is about 200 to 900 Å on an aluminum metal layer.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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17. Claims 1, 60-61, 63-66, 73, 79-80, and 82-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070).

Gustafson et al. disclose an apparatus comprises a substrate for attachment of binding agents (col. 5, lines 1-10; fig. 1). The binding agents include proteins (protein-binding agent) (col. 4, lines 6-32). The substrate comprises a flat layer (substantially planar surface) (ref. #14), a metal layer (ref. #12), and a transparent layer (ref. #2) (col. 5, lines 1-10; fig. 1). The flat layer comprises silicon or glass (col. 5, lines 36-50). The metal layer comprises metals such as aluminum (col. 5, lines 11-16). The transparent layer comprises materials such as silicon dioxide (col. 5, lines 17-26) and that the silicon dioxide coating is applied to the metal layer (col. 5, lines 61-63). Additionally, the thickness of the silicon dioxide layer is between 800 to 1200 Å (col. 3, lines 11-12) and the silicon dioxide is treated with a reagent such as aminosilane (anchoring segment and linker segment) (col. 6, lines 16-18). The aminosilane are functionalized with functional group such as amino, and thiol group (col. 7, lines 23-63).

The apparatus of Gustafson et al. does not expressly disclose that the binding agent include a peptidomimetic segment.

Pease et al. teach an apparatus comprise a substrate with an array of polymers such as peptide analogs such as peptidomimetics and oligonucleotides (col. 1, lines 52-57; col. 6, lines 4-54). The substrate is flat and comprise of silicon or glass surface (col. 8, lines 44-54; col. 12, lines 2-12). The surface of the solid substrate contain reactive groups such as amino (col. 12, lines 10-22). The substrate includes a surface with a layer of linker (col. 10, lines 24-28; col. 12,

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lines 31-35). Additionally, Pease et al. disclose that the substrate is comprises a modified silicon (non-native oxide-coated metal) (col. 12, lines 2-3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the binding agent to Gustafson et al. to include a peptidomimetic segment and a linker segment as taught by Pease et al. One of ordinary skill in the art would have been motivated to modify the binding agent to Gustafson et al. to include a peptidomimetic segment because the peptidomimetic protein would provide the advantage of a more economical production, greater chemical stability, enhanced pharmacological properties, altered specificity, and reduced antigenicity (Pease: col. 6, lines 54-60) since both Pease et al. and Gustafson et al. disclose an apparatus comprising an array of protein immobilized on a solid substrate (Gustafson: col. 5, lines 1-10; fig. 1; Pease: col. 1, lines 52-57). Furthermore, one of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al. and Pease et al. because the modification would enhance the specificity of the substrate for use in a bioassay.

18. Claims 62, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 60-61, 63-64, 73, 79-80, and 82-83 above, and further in view of Wagner et al. (US Patent 6,406,921 B1).

Gustafson et al. and Pease et al. disclose an apparatus comprising an array of protein immobilized on a substrate (Gustafson: col. 5, lines 1-10; fig. 1; Pease: col. 1, lines 52-57). The

protein includes peptide analogs such as peptidomimetic (Pease: col. 6, lines 4-54). The surface of the substrate comprises an anchoring segment and a linker segment (Gustafson: col. 6, lines 16-18 and col. 7, lines 23-63; Pease: col. 10, lines 24-28 and col. 12, lines 19-23 and 31-35)

The apparatus of Gustafson et al. and Pease et al. does not expressly include a maleimide functional group for binding with the protein binding agents.

Wagner et al. teach an array of proteins comprising a plurality of patches in discrete, known regions on a substrate, where a protein with different, known sequence is immobilized on each patch (col. 3, lines 26-29). The protein is refers to a polymer of amino acid that also include amino acid polymers in which one or more amino acid residues is an artificial chemical analogue of a corresponding naturally occurring amino acid (col. 6, lines 1-11). The array comprises of a monolayer on the surface of the substrate and the proteins are immobilized on the monolayer (col. 8, lines 9-17). They are three major classes of monolayer formation are preferably used to expose high densities of bioreactive functionalities on the array, which are alkylsiloxane monolayer, alkyl-thiol/dialkyldisulfide monolayer, and alkyl monolayer (col. 8, lines 18-41). The functional group on the monolayer for binding with the protein includes maleimide and N-hydroxysuccinimide (col. 11, lines 39-53).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a maleimide functional group for binding with the protein binding agents as taught by Wagner et al. in the apparatus of Gustafson et al. and Pease et al. One of ordinary skill in the art would have been motivated to include a maleimide functional group for binding with the protein binding agents in the apparatus of Gustafson et al. and Pease

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et al. because the type of functional group use would be a choice of experimental design and is considered within the purview of the cited prior art. Furthermore, one of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al., Pease et al., and Wagner et al. because Wagner et al. discloses that there are many possible functional group to use for immobilizing protein on a surface thus it depend on the choice of substrate and coating (col. 8, lines 34-41).

19. Claims 67-72, and 86-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 60-61, 63-64, 73, 79-80, and 82-83 above, and further in view of Barrett et al (US Patent 5,482,867).

Gustafson et al. and Pease et al. disclose an apparatus comprising an array of protein immobilized on a substrate (Gustafson: col. 5, lines 1-10; fig.1; Pease: col. 1, lines 52-57). The protein includes peptide analogs such as peptidomimetic (Pease: col. 6, lines 4-54). The surface of the substrate comprises an anchoring segment and a linker segment (Gustafson: col. 6, lines 16-18 and col. 7, lines 23-63; Pease: col. 10, lines 24-28 and col. 12, lines 19-23 and 31-35)

The apparatus of Gustafson et al. and Pease et al. does not expressly disclose that the anchoring segment includes biotin and avidin.

Barrett et al. teaches an array of immobilized ligands on predefined regions of a surface of a solid support (col. 2, lines 36-41). The method involves attaching to the surface a caged binding member (anchor). The ligand includes peptides (col. 4, lines 34-60). The caged binding

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member is a biotin analog (col. 5, lines 45-56). Avidin can be immobilized onto the surface of the solid support and bind to biotin (col. 5, lines 57-65). One type of biotin analog is a biotin with N-succinimidyl and a linking group of 6-aminocaproic (NHS-lc-lc-biotin) (col. 14, lines 66-67 to col. 15, lines 1-30).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the anchoring segment includes biotin and avidin as taught by Barrett et al. in the apparatus of Wagner et al. and Pease et al. One of ordinary skill in the art would have been motivated to include the anchoring segment includes biotin and avidin in the apparatus of Wagner et al. and Pease et al. for the advantage of providing an efficiently and stably attaching a broad range ligands on predefined regions of a solid support (Barrett: col. 2, lines 26-32). One of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al., Pease et al., and Barrett et al. because Wagner et al., Pease et al., and Barrett et al. disclose an apparatus comprising an array of biomolecules such as protein immobilized on a solid substrate (Gustafson: col. 5, lines 1-10; fig. 1; Pease: col. 1, lines 52-57; Barrett: col. 2, lines 36-41).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MY-CHAU T TRAN whose telephone number is 571-272-0810. The examiner can normally be reached on Mon.: 8:00-2:30; Tues.-Thurs.: 7:30-5:00; Fri.: 8:00-2:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDREW WANG can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mct
April 23, 2004


PADMASHRI PONNALURI
PRIMARY EXAMINER